

REMARKS

35 U.S.C. § 103

Claims 1, 3-7 and 10-12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over US 5,076,329 to Brunnhofer in view of U.S. 5,476,121 to Yoshikawa et al. This rejection is respectfully traversed for the following reasons.

Brunnhofer discloses a three layer hose intended for use a fuel line carrying alcohol-modified fuels. The hose 1 has an outer layer 2 of polyamide that forms the major component of the hose, an adjacent alcohol barrier layer 3 formed of an extrudable PVA based composition, and an innermost water barrier layer 4 of polyamide. Brunnhofer is silent about the presence or use of an intermediate layer bonded directly to the inner barrier layers and a reinforcing layer.

To make up for the deficiencies of Brunnhofer, Yoshikawa is applied to teach the use of a reinforcing layer and an intermediate layer. It is stated in the Office Action that it would have been obvious to apply a reinforcing layer to the hose of Brunnhofer "to improve the strength of the hose." It is also held that it would have been obvious to substitute for the intermediate layer of Brunnhofer an intermediate layer of rubber as suggested by Yoshikawa to provide flexibility to the hose. Applicant respectfully disagrees with both positions for the following reasons.

To establish *prima facie* obviousness, there 1) must be some suggestion or motivation in the art to modify or combine the references; 2) must be a reasonable expectation of success and 3) the combined references must teach or suggest all the claim limitations.

In regard to the reinforcement layer, Brunnhofer is silent about such a layer. It is held that it would obvious to add such a layer for strength. While a reinforcing layer may potentially improve the strength of the hose, it would destroy the method of manufacturing of the hose as disclosed by Brunnhofer, and likely destroy the bonding of the hose layers. Brunnhofer discloses that the layers of the three layer hose "are mutually bonded together by the co-extrusion" (col 4, lines 21-24) of the three layers from "respective worm presses through a common coaxial flow die" (col 4, lines 12-14). To add a reinforcing layer, as disclosed by Yoshikawa, would prevent the hose from being co-extruded as, prior to application of the hose cover, the hose must be sent through a braider for application of the reinforcing layer. When EVOH and polyamide layers are co-extruded, the heat of the materials during co-extrusion causes chemical bonding between the layers; the all thermoplastic hose does not need further heating or vulcanization to create bonding between

the various layers. Sending the partially formed hose to a braider to add a reinforcing layer outward of the two inner barrier layers would significantly interfere with achieving adequate bonding of the outermost nylon layer to the reinforcement layer as the outermost nylon layer will not have an adjacent thermoplastic layer with which to bond to. Thus, while hose reinforcing layers are well known in the hose art, one of ordinary skill in the art at the time of the invention would not have found it obvious to add a reinforcing layer to the hose of Brunnhofer as there would be no reasonable assurance of success as the bonding of the thermoplastic layers would be seriously compromised to the point of not achieving an adequate bonding of the layers.

Regarding the intermediate layer, to substitute the intermediate layer of Brunnhofer, the EVOH layer, for the intermediate rubber layer of Yoshikawa et al as asserted in the Office Action destroys the teachings of Brunnhofer. The intermediate EVOH layer of Brunnhofer is critical for its alcohol barrier properties. One skilled in the art would not simply substitute the thermoplastic layer with a rubber layer, as there is no assurance that the hose would still perform as desired by Brunnhofer. In the rejection, it is held that such a substitution would have been done for improved flexibility; however, Brunnhofer teaches that if flexibility is required, then plasticizer should be added to the polyamide layers (col 3, lines 5-8).

Additionally, by substituting the layer of EVOH for a rubber layer, than the modified hose of Brunnhofer lacks an element of the recited hose, specifically, it would lack the recited vinyl resin layer.

While not set forth in the rejection, the addition of a rubber layer to the hose of Brunnhofer also would not have been obvious to one of ordinary skill in the art. As noted above, Brunnhofer achieves bonding of the various layers through co-extrusion with no other treatment steps required to produce the completed hose. In adding a non-thermoplastic layer to the hose of Brunnhofer, the taught method of manufacturing is significantly altered as the various layers (excluding the adjacent barrier layers to each other) will not sufficiently bond to one another absent vulcanization of the rubber layer.

As the proposed modifications to Brunnhofer in essence destroys or significantly alters the teachings of Brunnhofer, fails to have a reasonable expectation of success, and, as proposed, fails to teach or suggest all the claim limitations, the rejection fails to establish *prima facie* obviousness. It is requested that this rejection be reconsidered and withdrawn.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brunnhofer in

view of Yoshikawa et al as applied to claim 1 and further in view of US 6,068,026 to Garois.
This rejection is respectfully traversed for the following reasons:

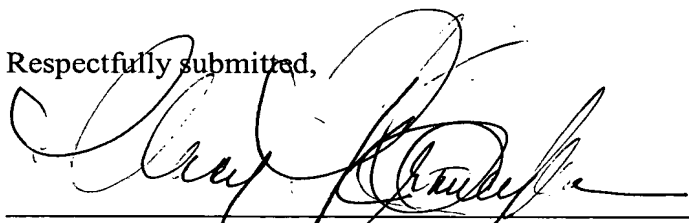
Garois is silent for the teachings of an elastomeric layer as the innermost layer, Garois fails to remedy the deficiencies of the above rejection.

Allowable Subject Matter

Claims 4, 5, 8 and 9 have been objected to as being dependent upon a rejected base claim. The indication of allowability is appreciated; however, at this time, Applicant declines incorporating the allowed subject matter into independent claims as they believe the current independent claim is allowable over the cited prior art.

Applicant believes all of the pending claims are allowable over the cited prior art and an indication of allowability of all claims would be appreciated.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Nancy T. Krawczyk', written over a horizontal line.

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